

Remarks

Claims 1-14, 24-31, 33-38, 47-50, 52, 112-119, 124-127, 137-139, 141, 144, 146, and 149-161 are pending.

Claims 24, 25, 33, 124 and 156 have been amended.

Support for the amendments to Claims 24, 25 and 124 is in the specification at page 10, lines 5-6, and in FIGS. 12 and 17. Support for the amendments to Claims 33 and 156 is in the specification at pages 14-15, bridging paragraph, and FIGS. 21 and 23.

No new matter has been added with the amendments to the claims, which are intended to merely clarify language used in the claims and the subject matter claimed. The scope of the claims is intended to be the same as before the amendment.

Rejection under 35 U.S.C. § 103(a) (Tuckerman)

The Examiner rejected Claims 1-7, 11, 24-25, 33, 112-114, 124, 125, 144, 146, 149-153, and 160 as obvious over Tuckerman, USP 5,804,004. This rejection is respectfully traversed.

The Examiner admits that Tuckerman fails to disclose the recess is non-beveled, but maintains that the shape of the recess is not a significant limitation and that it would be obvious to modify the shape of the recess, stating as follows at page 4 (emphasis added):

In addition, applicant has not disclosed that the shape of the recess solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with beveled recess as disclosed in Tuckerman.

First of all, Tuckerman does not teach or suggest a die assembly as in Claims 24, 25, 33, or 124-125.

Claims 24, 25, 124-125 recite that the first die (situated on the substrate) includes a *recess* – and that a second die is at least *partially situated within the recess* – such that an overall thickness of the first and second dies within the die assembly is less than the thicknesses of the first and second dies combined.

Claim 33 recites that the first die is attached to the substrate by an adhesive element *situated within a recess* – such that the adhesive element does not contribute to an overall height of the die assembly.

There is nothing in Tuckerman that teaches or suggests these features of Applicant's die assemblies. Accordingly, withdrawal of the rejection of these claims is respectfully requested.

As for Claims 1-7, 11, 112-114, 144, 146, 149-153, and 160, Tuckerman does not teach or suggest the die assembly as recited in those claims having a non-beveled edge along the perimeter of the second die.

Throughout the disclosure, Tuckerman *repeatedly* states that the edge of the chip is beveled in order to ensure clearance for the wire lead of the lower chip – and teaches a preferred bevel angle of about 35° (bridging paragraph, cols. 3-4).

Tuckerman specifically teaches a *low profile bonding* technique in combination with *beveling* the edge of the chip.

In particular, Tuckerman teaches a low loop profile with a relatively *flat* horizontal component – which minimizes the amount of beveling required on the upper chip. See col. 5, lines 1-11 (emphasis added):

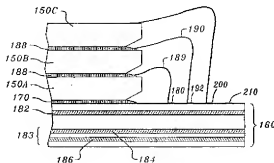
In step 420, IC 150a is then wire bonded to bond pads located on the silicon circuit board 160. Wire bonding may be done using aluminum or gold wire ultrasonic wedge bonding, preferably in a reverse bonding sequence i.e., where the first bond is made on the substrate. The loop profile is kept low and has a steep vertical ascent and relatively flat horizontal component. The low profile minimizes the amount of beveling required on the upper chips to preclude contact between the wires and the silicon. When the chip is approximately 10-20 mils thick, a chip to bond pad clearance of 20-25 mils proves acceptable.

Thus, Tuckerman's invention focuses on *minimizing the removal of material* from the chip by providing an angled/beveled chip edge and utilizing a low profile bonding technique.

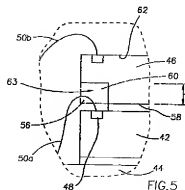
One skilled in the art reading Tuckerman's disclosure would have no motivation to alter the chip edge from a beveled/angled edge– to a non-beveled edge as provided by Applicant.

An advantage of Applicant's device which incorporates a non-beveled edge rather than an angled/beveled edge along the perimeter of the die is the *additional space* within the recess that is available for maneuvering a bonding tool to attach wires without contacting the underside of the upper die. This also accommodates bonding techniques that do not require

the degree of low profile bonding as with Tuckerman's device. This is clearly illustrated below in FIG. 4A of Tuckerman – and FIG. 5 of the present application.



Tuckerman's Figure 4A



Applicant's Figure 5

Applicant's device does not require as low of a loop height nor as shallow of an exit angle of the wire in the vicinity of the chip bond pad as is taught by Tuckerman (see at col. 3, lines 18-21).

Nothing in Tuckerman teaches or suggests a die assembly as claimed by Applicant having a *non-beveled* edge along the perimeter of an upper die – or the advantages of Applicant's devices as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection under 35 U.S.C. § 103(a) (Tuckerman, Zuhr)

The Examiner rejected Claims 8, 9, 26-27, 30-31, 37-38, 52, 119, 126-127, 137-139, 141, 144, and 153 as obvious over Tuckerman in view of Zuhr (DE 10209204). This rejection is respectfully traversed.

It is noted that this rejection was previously addressed in the Response filed November 16, 2005.

The present application USSN 10/068,159 was filed February 5, 2002.

Zuhr was published on October 2, 2003.

Zuhr has been improperly cited against this application. Zuhr was published *after* the filing date of the present application.

Accordingly, withdrawal of this rejection is respectfully requested.

Extension of Term. The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for extension of time. If any extension and/or fee are required, please charge Account No. 23-2053.

It is respectfully submitted that the claims are in condition for allowance and notification to that effect is earnestly solicited. The Examiner is urged to telephone the undersigned attorney if any questions should arise.

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